

CLAIMS

- 1 - Protection device against voltage surges, comprising:
- a first connecting electrode in electrical connection with a first connecting pad,
 - a second connecting electrode in electrical connection with a second connecting pad,
 - a third mobile arc switching electrode electrically connected to the second connecting pad,
 - an arc chute opening out onto the first and second connecting electrodes,
 - means for driving the mobile electrode with respect to the first connecting electrode from an operating position to a switching position moving away from the first connecting electrode and moving towards the second connecting electrode, so that an electric arc drawn between the first connecting electrode and the mobile electrode switches between the first connecting electrode and the second connecting electrode when the mobile electrode moves from the operating position to the switching position,
 - an electric dipole connected in such a way that when the mobile electrode is in the operating position, the electric dipole is connected to the arc switching electrode on the one hand and to the first or second connecting pads on the other hand, and that when the mobile electrode is in the switching position and an electric arc is drawn between the first connecting electrode and the second connecting electrode, the electric dipole is disconnected from the circuit, the electric dipole having an ohmic resistance varying non linearly with the voltage applied to the dipole, the ohmic resistance being high when the voltage is lower than an ignition voltage and decreasing when the voltage increases above the ignition voltage.
- 2 - Device according to claim 1, wherein the electric dipole is connected in series between the switching electrode and the second connecting pad.
- 30 3 - Device according to claim 2, wherein the mobile electrode in the operating position is in contact with the first connecting electrode.

4 – Device according to claim 1, wherein the electric dipole is connected in series between the first connecting electrode and a fixed fourth electrode situated at a distance from the first connecting electrode and in such a way that the mobile electrode in the 5 operating position is electrically connected to the fixed fourth electrode.

5 – Device according to claim 1, comprising in addition electromagnetic induction projection means to induce electromagnetic forces on an electric arc formed between the first connecting electrode and the mobile electrode tending to project the arc to the arc 10 chute and/or tending to make the arc switch on the second connecting electrode.

6 – Device according to claim 1, wherein the driving means comprise electromagnetic induction repulsion means to induce electromagnetic forces on the mobile electrode through which a current is flowing tending to drive the mobile electrode to the switching 15 position.

7 – Device according to claim 6, wherein the electromagnetic induction repulsion means comprise a magnetic driving circuit to channel a magnetic flux generated by an electric current flowing between the first connecting pad and the first connecting electrode 20 to the mobile electrode in the operating position, so that when an electric current flows from the first connecting pad to the mobile electrode, electromagnetic forces are induced in the mobile electrode, tending to drive the mobile electrode to the switching position.

8 – Device according to claim 1, wherein the driving means comprise an electro- 25 mechanical relay sensitive to the current flowing in the first connecting electrode or the mobile electrode.

9 – Device according to claims 1, wherein the driving means comprise a mechanism equipped with a mobile means for operation between an operating position and a 30 disconnection position and a kinematic link between the means for operation and the mobile electrode to drive the mobile electrode to a disconnected position when the means for operation move from the operating position to the disconnection position.

- 10 – Device according to claim 1, wherein the driving means comprise flexible return means for returning the mobile electrode to the operating position.
- 5 11 – Device according to claim 1, wherein the driving means comprise an energy storage spring, discharging when driving the mobile electrode from the operating position to the switching position.
- 10 12 – Device according to foregoing claim 1, wherein the electric dipole comprises a variable resistor.